

What is claimed is:

- 1    1.     An apparatus, comprising:
  - 2           a bus to facilitate data transfers between clients; and
  - 3           an arbiter coupled to the bus to grant bus access to one of the clients at a time
  - 4       based on a programmable priority assigned to at least some of the clients and on an age
  - 5       of an ungranted bus request.
- 1    2.     The apparatus of claim 1, wherein the clients include master clients and target
- 2       clients, wherein the arbiter is to alternate granting bus access to a requesting one of the
- 3       master clients and a requesting one of the target clients.
- 1    3.     The apparatus of claim 2, wherein the arbiter is to grant bus access to a
- 2       requesting one of the target clients based on round-robin arbitration.
- 1    4.     The apparatus of claim 2, wherein the arbiter is to grant bus access to a
- 2       requesting one of the master clients based at least partly on hierarchical arbitration.
- 1    5.     The apparatus of claim 1, wherein the arbiter comprises a programmable storage
- 2       structure to store the programmable priority.
- 1    6.     The apparatus of claim 1, wherein:
  - 2           the age is indicated by a number of clock cycles since the ungranted bus
  - 3       request; and
  - 4           the arbiter comprises logic to contain an indicator of the number of clock cycles.

- 1     7.     The apparatus of claim 1, wherein:  
2           the age is indicated by an elapsed time since the ungranted bus request; and  
3           the arbiter comprises logic to contain an indicator of the elapsed time.
- 1     8.     The apparatus of claim 1, wherein the bus is to use a split-transaction data  
2           transfer protocol.
- 1     9.     The apparatus of claim 1, wherein the arbiter comprises a centralized arbiter.
- 1     10.    A method, comprising:  
2           determining which pending bus requests from clients have a highest  
3           programmable hierarchical priority and a greatest time interval since  
4           requesting access to a bus, based on an algorithm; and  
5           granting access to the bus based on said determining.
- 1     11.    The method of claim 10, further comprising limiting said determining to retried  
2           pending bus requests.
- 1     12.    The method of claim 11, further comprising granting bus access based on  
2           existence of at least one special condition prior to granting bus access based on said  
3           determining.

1    13.    The method of claim 10, wherein said determining further comprises  
2            determining priority based on order of physical connection among the clients,  
3            responsive to multiple clients having the highest programmable hierarchical  
4            priority and the greatest time interval since requesting access to the bus based  
5            on the algorithm.

1    14.    The method of claim 10, wherein:  
2            said determining is applied to the pending bus requests from master clients; and  
3            bus requests from target clients are handled separately from said determining.

1    15.    The method of claim 14, wherein the bus requests from the target clients are  
2            arbitrated using round robin priority.

1    16.    A system, comprising:  
2            a bus to transfer data between clients;  
3            a volatile memory coupled to the bus; and  
4            an arbiter coupled to the bus to arbitrate pending bus requests from a first type  
5                      of the clients based on a programmable hierarchical ranking of the first  
6                      type of the clients and on a time interval indicating how long each of the  
7                      bus requests has been pending.

1    17.    The system of claim 16, wherein the arbiter is to consider the time interval only  
2            when multiple ones of the pending bus requests have a same highest programmable  
3            hierarchical ranking.

4 18. The system of claim 17, wherein the arbiter is to give priority to retried bus  
5 requests before the pending bus  
6 requests based on the hierarchical ranking and the time interval.

1 19. The system of claim 16, wherein:  
2 the first type of clients are master clients;  
3 a second type of clients are target clients; and  
4 the arbiter is to arbitrate bus requests from the target clients separately from  
5 arbitrating the bus requests from the master clients.

1 20. The system of claim 19, wherein the arbiter is to arbitrate bus requests from the  
2 target clients using round-robin priority.